Protocol Title: A Phase I/II Pilot Study of the Safety of the Adoptive Transfer of Syngeneic Gene-Modified Cytotoxic T Lymphocytes in HIV-Infected Identical Twins

Non-technical Abstract: HIV infection progressively destroys the human immune system and results in AIDS in the majority of patients. There is currently no cure for HIV infection or AIDS. White blood cells called CD8+ T cells kill cells infected with viruses and are an important component of the body's defense against viral infections. Although CD8+ T cells play an important role in temporarily controlling HIV infection, data suggest that a breakdown of the cell response may be responsible for progression to AIDS. Cell Genesys, Inc. has designed "universal receptors" that when inserted into CD8+ T cells will recognize HIV-infected cells and kill them.

In the proposed clinical study, CD8+ T cells will be removed from an uninfected identical twin of an HIV-infected patient and modified by genetically inserting the"universal receptor". The genetically modified cells will be purified and expanded to large numbers in the laboratory before infusion into the HIV-infected twin patient. The study is divided into two periods. In the first period, patients will receive single doses of CD8+ T cells with or without the "universal receptor". In the second period, patients will receive up to six doses of CD8+ T cells with or without the "universal receptor". This type of treatment is called adoptive immunotherapy. This collaborative clinical study between Cell Genesys and investigators at the NIH will evaluate the safety and tolerance of adoptive immunotherapy with CD8+ T cells containing the "universal receptor". By monitoring immune status, viral burden, organ function, and persistence of the cells in the body, we hope to determine whether this potential therapeutic approach is feasible and safe. This study may form the baseline for future protocols using T cells obtained directly from HIV patients.